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EXAMINER
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QUAN, ELIZABETH S

ART UNIT	PAPER NUMBER
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1743

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10

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/723,400

Applicant(s)

WINEGARDEN ET AL.

Examiner

Elizabeth Quan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 44-89 is/are pending in the application.
- 4a) Of the above claim(s) 89 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 44-88 is/are rejected.
- 7) ☐ Claim(s) 49, 54, 56, 60, 61 and 82 is/are objected to.
- 8) ☒ Claim(s) 44-89 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Newly submitted claim 89 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Invention I (claims 44-88), drawn to a manifold, classified in class 422, subclass 100, and Invention II (claim 89), drawn to a microarrayer substrate, classified in class 422, subclass 104, are distinct. They are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as a picture frame, microscope slide, microtiter plate, or surgical device to hold body members(s). See MPEP § 806.05(d). Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 89 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Canada on 8/16/2000. It is noted, however, that applicant has not filed a certified copy of the 2,316,045 application as required by 35 U.S.C. 119(b).

#### ***Drawings***

3. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

#### ***Specification***

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Objections***

- 1) Claims 60, 82 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The microarrayer appears to have already been claimed. The spotting members as claimed in the independent claims are part of the microarrayer.
- 2) Claims 49, 54, 56, 60, 61 are objected to because of the following informalities: "claim" should be plural "claims". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

- 1) The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 2) Claims 50, 53, 59, 81 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 50, the specification does not mention solid pins or split pins. Regarding claim 53, neither the specification nor drawings disclose a cover, which defines a plurality of cover apertures there through, secured to the plate over the inlets. It is unclear whether the cover is referring to the plate supporting the spotting members or a separate cover for covering the plate when the spotting members are not inserted into the apertures. If the cover is referring to the plate supporting the spotting members, there is possibly an enablement issue as it does not seem possible that the diameter of each of the cover aperture is less than the diameter of the inlet since it has been claimed that the diameter of the body of the spotting member is greater than the diameter of the vacuum aperture. Regarding claims 59 and 81, neither the specification, drawings, nor original claims disclose that the source vacuum pressure provides a pressure of at least 90 psi.

- 3) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

- 4) Claims 44-67, 82 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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- 5) Regarding claims 44-46, the word "means" is preceded by the word(s) "turbulence" and/or "vacuum" and/or "reciprocating" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).
- 6) Referring to claims 60, 82, the claim is rendered indefinite. There is no structure claimed, and the microarray has apparently been claimed since the spotting members are part of the microarray.
- 7) Referring to claim 61, it is unclear what part of the assembly of claims 44 or 45 a vacuum is being applied to.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 44-47, 54-56, 60, 61, 62, 65-71, 75, 82-84, 87, and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,753,775 to Ebersole et al.

Referring to claims 44-47, 54-56, 60, 61, 62, 65-71, 75, 82-84, 87, and 88,

Ebersole et al. disclose a manifold assembly (10) for removing liquid from microarrayers

or microarray spotting members (36) (see ABSTRACT; FIGS. 1-9; COL. 5, lines 5-52).

The spotting members (36) each have a spotting member body (40) and a tapered first open end portion (42), which comprises a tip, for printing a spot on a microarray slide (see FIG. 2; COL. 9, lines 5-13). The manifold assembly (10) comprises a plate and turbulence means (see FIGS. 1 and 7-9; COL. 5, lines 33-35; COL. 10, lines 50-53; COL. 11, lines 67 and 68; COL. 12, lines 1 and 2). The plate defines a plurality of fluid flow apertures (20,32) extend through the plate (see FIGS. 1A, 1, 7A, 7, 8, and 9; COL. 8, lines 16-68; COL. 9, lines 1-13). The apertures (20,32) comprise channels each defining an inlet and outlet in fluid communication (see FIGS. 1, 7A, and 8). The bodies (40) of the spotting members (36) each have a diameter that is greater than the diameter of the apertures (20,32), which inherently has an axis (see FIGS. 1, 1A, 7, 7A, 8, 9). The first open end portion (42) of the spotting member (36) is adapted to extend into the aperture (20,32) (see FIGS. 1, 1A, 7, 7A, 8, 9). It appears that approximately half of the tapered first open end portion (42) is adapted to extend into the aperture (20,32) (see FIG 1). The turbulence means, which creates turbulence between the spotting members (36) and the apertures (20,32) to remove liquid from the first open end portions (42) of the spotting members (36) through the apertures (20,32), is inherent to the system and method of operating the system. In light of the specification, which states that the spotting members are reciprocated up and down to create further air turbulence for excellent cleaning, Ebersole et al. disclose a means to place the open end (42) of the spotting member (36) in fluid communication with the aperture (20,32) in a second position and remove the spotting member (36) from the aperture (20,32) in a first position, which provides the

reciprocation for creating air turbulence between the spotting members (36) and apertures (20,32) for removing liquid from the first open ends (42) of the spotting members (36) through the apertures (20,32) (see COL. 5, lines 25-52; COL. 9, lines 4-23; COL. 10, lines 24-67; COL. 11, lines 1-68; COL. 12, lines 1-9). It appears that the spotting members (36) are concentric with the apertures (20,32) during reciprocation (see FIG. 1). Ebersole et al. also disclose coordinating the opening of the vacuum and air valves in pulses, which provides agitation to distribute or remove fluids from the spotting members (36) (see COL. 8, lines 26-28; COL. 10, lines 24-68; COL. 11, lines 1-68; COL. 12, lines 1-31). A source of vacuum (18) is provided for drawing air around the spotting members (36) to flow through the apertures (20,32) (see COL. 8, lines 19-21; COL. 10, lines 24-68; COL. 11, lines 1-68; COL. 12, lines 1-31). A valve (14) and conduit (12) couple the plate to communication with source of vacuum (18) that draws liquid from the microarray spotting members (36) through the apertures (20,32) (see FIGS. 1,1A).

Therefore, Ebersole et al. includes all the limitations in claims 44-47, 54-56, 60-62, 65-71, 75, 82-84, 87, and 88.

7. Claims 44-50, 54-56, 60-62, 65-72, 75-77, 82-84, 87, and 88 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,551,557 to Rose et al.

Referring to claims 44-50, 54-56, 60-62, 65-72, 75-77, 82-84, 87, and 88, Rose et al. disclose a manifold assembly (79) for removing liquid from microarrays or microarray spotting members (200), such as slotted pins (see ABSTRACT; FIGS. 1-6B; COL. 5, lines 61-67; COLS. 6-9; COL. 10, lines 1-52). Applicant has not defined what solid and split pins for. For examining purposes, slotted pins are made of solid material,



and since they are slotted or possess a narrow opening or groove as defined by the Merriam-Webster Collegiate Dictionary, they are considered split pins as well. The spotting members (200) each have a spotting member body (202) and a tapered first open end portion (204), which comprises a tip (205), for printing a spot on a microarray slide (see FIGS. 1, 3, 6B; COL. 4, lines 55-67; COL. 5, lines 1-60). The manifold assembly (79) comprises a plate and turbulence means (see FIGS. 6A and 6B; COL. 6, lines 5-8; COL. 7, lines 51-57). The plate defines a plurality of fluid flow apertures (84), which are arranged in parallel rows, extend through the plate (see FIGS. 6A and 6B; COL. 7, lines 58-67; COL. 8, lines 1-67; COL. 9, lines 1-28). The apertures (84) comprise channels each defining an inlet and outlet in fluid communication (see FIGS. 6A and 6B). The bodies (202) of the spotting members (200) each have a diameter that is greater than the diameter of the apertures (84), which inherently has an axis (see FIG. 6B). The first open end portion (204) of the spotting member (200) is adapted to extend into the aperture (84) (see FIGS. 1 and 6B). It appears that approximately half of the tapered first open end portion (204) is adapted to extend into the aperture (84) (see FIG. 1). The turbulence means, which creates turbulence between the spotting members (200) and the apertures (84) to remove liquid from the first open end portions (204) of the spotting members (200) through the apertures (84), is inherent to the system and method of operating the system. In light of the specification, which states that the spotting members are reciprocated up and down to create further air turbulence for excellent cleaning, Rose et al. disclose a means to place the open end (204) of the spotting member (200) in fluid communication with the aperture (84) in a second position and remove the spotting

member (200) from the aperture (84) in a first position, which provides the reciprocation for creating air turbulence between the spotting members (200) and apertures (84) for removing liquid from the first open ends (204) of the spotting members (200) through the apertures (84) (see COL. 6, lines 5-8; COL. 7, lines 51-57; COL. 9, lines 29-67; COL. 10, lines 1-67; COL. 11, lines 1-18; COL. 15, lines 57-64). It appears that the spotting members (200) are concentric with the apertures (84) during reciprocation (see FIGS. 6A and 6B; COL. 6, lines 5-8; COL. 7, lines 51-57; COL. 9, lines 29-67; COL. 10, lines 1-67; COL. 11, lines 1-18; COL. 15, lines 57-64). Rose et al. also disclose the distribution of vacuum, which provides agitation or turbulence to remove fluids from the spotting members (200) (see COL. 7, lines 58-67; COL. 8, lines 1-56). A source of vacuum (80) is provided for drawing air around the spotting members (200) to flow through the apertures (84) (see COL. 7, lines 58-67; COL. 8, lines 1-56). A conduit couples the plate to communication with source of vacuum (80) that draws liquid from the microarray spotting members (200) through the apertures (84) (see FIGS. 6A).

Therefore, Rose et al. include all the limitations in claims 44-50, 54-56, 60-62, 65-72, 75-77, 82-84, 87, and 88.

### ***Claim Rejections - 35 USC § 103***

- 1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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- 2) The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 3) This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 4) Claims 49, 50, 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. optionally in view of U.S. Patent No. 6,086,825 to Sundberg et al.

Referring to claims 49, 50, 77, Ebersole et al. disclose that the spotting member may be a pipette. Ebersole et al. do not explicitly disclose spotting members that are pins. However, pipettes and pins are recognized equivalents in dispensing. Sundberg et al. disclose that fluid may be introduced into the ports using a pipette, pin, or the like (see COL. 8, lines 24-42). Therefore, it would have been obvious to one having ordinary

skill in the art at the time the invention was made to substitute the pipette of Ebersole et al. with a pin since they are recognized equivalents in the art of dispensing.

5) Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No.

4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al. optionally in view of U.S. Patent No. 4,832,842 to Limb and/or U.S. Patent No. 6,455,007 to Mansky et al. and/or U.S. Patent No. 6,054,100 to Stanchfield et al.

Referring to claim 53, neither Ebersole et al. nor Rose et al. disclose a cover, which define a plurality of cover apertures there through concentric with an inlet of the plate, secured to the plate over the inlets wherein the diameter of each cover aperture is less than the diameter of the inlet. However, it is very well known to use a cover with holes smaller than the aperture for the purpose of inserting the spotting member into the aperture while reducing the loss of vacuum from within the manifold. Limb discloses that cover (28), which defines a plurality of apertures (38) there through, is secured to the plate (40) over the inlets (44) such that the apertures (38) are concentric with an inlet (44) of the plate (40) (see FIGS. 3-5). The diameter of each of the cover aperture (38) is smaller than the diameter of the inlet. It appears the configuration allows minimal loss of vacuum by providing sufficient but small holes for inserting spotting members. Mansky et al. disclose that cover (28), which defines a plurality of apertures (56) there through, is secured to plate (26) over the inlets such that the apertures (56) are concentric with an inlet of the plate (26) (see FIG. 1A). The diameter of each of the cover aperture (56) is smaller than the diameter of the inlet. It appears the configuration allows minimal loss of vacuum by providing sufficient but small holes for inserting spotting members.

Stanchfield et al. disclose that cover (56), which defines a plurality of apertures (70) there through, is secured to plate (26) over the inlets such that the apertures (70) are concentric with an inlet of the plate (26) (see FIG. 1). The diameter of each of the cover aperture (70) is smaller than the diameter of the inlet. It appears the configuration allows minimal loss of vacuum by providing sufficient but small holes for inserting spotting members (see COL. 11, lines 29-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Ebersole et al. or Rose et al. to provide the claimed cover as in Limb and/or Mansky et al. and/or Stanchfield et al. for minimal loss of vacuum by providing sufficient but small holes for inserting spotting members.

- 6) Claims 57-59, 79-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al.

Referring to claims 57-59, 79-81, Ebersole et al. disclose that the vacuum source should be able to provide at least 25 inches of mercury of vacuum, which is at least about 12 pounds per square inch (psi) (see COL. 8, lines 59-61). Ebersole et al. do not explicitly disclose that the vacuum is created by a compressed air system providing a pressure between 50-90 psi, at least 90 psi, or 60 psi. Rose et al. does not address the amount of vacuum applied. Applicant has not disclosed that applying vacuum at any amount solves any stated problem or is for any particular purpose. However, it is very well known to provide these vacuum pressures as needed to clean the tips in a designated amount of time with the tip at a certain distance from the vacuum. Other variables such as the configuration of the system, including but not limited to the distance between the

vacuum source and the vacuum aperture where the tip is located and the configuration of the path between the vacuum source and the vacuum aperture, affect how much vacuum pressure must be applied for the desired effect. Discovering the optimum range or workable range, such as the vacuum pressure provided by a pressure system for a certain flow rate of fluid being removed from the tip, requires only routine skill in the art (*In re Aller*, 105 USPQ 233). Discovering the optimum or workable value, such as the vacuum pressure provided by a pressure system for a certain flow of fluid being removed from the tip, requires only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Ebersole et al. or Rose et al. to determine an optimum range of pressure provided by the compressed air system, such as 50-90 psi, at least 90 psi, or 60 psi for the desired flow rate of fluid being removed from the tip.

1. Claims 57-59, 79-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al. in view of U.S. Patent No. 6,416,713 to Ford et al.

Referring to claims 57-59, 79-81, neither Ebersole et al. nor Rose et al. explicitly disclose that the vacuum is created by a compressed air system providing a pressure between 50-90 psi. Ford et al. disclose that pressure can be provided by a compressed air system of up to 90 psi (see COL. 14, lines 65 and 66). Discovering the optimum range or workable range, such as the pressure provided by a compressed air system for a certain flow rate, requires only routine skill in the art (*In re Aller*, 105 USPQ 233). Therefore, it

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would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Ebersole et al. or Rose et al. to determine an optimum range of pressure provided by the compressed air system for the desired flow rate of liquid that is less than 90 psi as taught by Ford et al.

Referring to claim 16, neither Ebersole et al. nor Rose et al. explicitly disclose that pressure can be provided by a compressed air system providing a pressure of 60 psi. Ford et al. disclose that pressure can be created by a compressed air system of up to 90 psi (see COL. 14, lines 65 and 66). Discovering the optimum value of a result effective variable, such as the pressure provided by a compressed air system for a certain flow rate, requires only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Ebersole et al. or Rose et al. to determine an to select an optimum pressure provided by the compressed air system for the desired flow rate of liquid that is less than 90 psi as taught by Ford et al.

- 7) Claims 48, 51, 52, 72-74, 76, 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al.

Referring to claims 48, 51, 52, 72-74, 76, 78, Ebersole et al. show 5 apertures for removing liquid from 5 spotting members. Ebersole et al. do not disclose 48 or 32 apertures arranged in parallel rows capable of simultaneously removing liquid from 48 or 32 spotting members, respectively. Rose et al. show 16 apertures arranged in parallel rows for removing liquid from spotting members. Rose et al. further disclose 2, 4, 8, 16, 32, etc. tips and the use of 96, 384, or 1536 well plate. Rose et al. do not explicitly

disclose 48 or 32 apertures capable of simultaneously removing liquid from 48 or 32 spotting members, respectively. However, it is very well known to use 32, 48, 96, or 1536 apertures arranged in parallel rows as necessary for cleaning 32, 48, 96, or 1536 spotting members of a microarrayer arranged in parallel rows after creating spots in the conventional multi-well plate of 32, 48, 96, or 1536 apertures, which are arranged parallel rows. The mere duplication of parts without any new and unexpected results is within the skill in the routineer in the art (*In re Harza*, 124 USPQ 378 (CCPA 1960)). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Ebersole et al. or Rose et al. to duplicate the number of apertures to 32, 48, 96, or 1536 apertures arranged in parallel rows as necessary to accommodate the number of spotting members, which conform to the number of wells of conventional multi-well plates.

8) Claims 63, 64, 85, 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al.

Referring to claims 63, 64, 85, 86, Ebersole et al. disclose reciprocating the spotting members by placing them into the vacuum apertures and removing them from the vacuum apertures. Ebersole et al. do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Rose et al. disclose reciprocating the spotting members by a robot arm in the x-, y-, and z- directions. Rose et al. also do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Applicant has not disclose that reciprocating the spotting members from the vacuum apertures at a certain distance solves any stated problem or is for any particular



purpose. It is noted that intrinsically that the spotting member would be at 100 micrometers or 1 mm away from the aperture as the process of placing the spotting member into the aperture and removing the spotting member from the aperture would make the spotting member 100 micrometers or 1 mm away at some moment during the process of reciprocation. It is also very well known to reciprocate spotting members from the vacuum apertures by small distances, such as 100 micrometers or 1 mm, in order to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip. Discovering the optimum range or workable range, such as the reciprocation distance for reduction of splashing and vacuum to remove fluid within and around the tip and certain drop size, requires only routine skill in the art (*In re Aller*, 105 USPQ 233). Discovering the optimum or workable value, such as the reciprocation distance for reduction of splashing and pressure to remove fluid within and around the tip and certain drop size, requires only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Ebersole et al. or Rose et al. to have a reciprocation distance of 1 mm or 100 micrometers between the tip and aperture to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip.

2. Claims 63 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al. in view of U.S. Patent No. 4,439,526 to Columbus.

Referring to claims 63 and 83, Ebersole et al. disclose reciprocating the spotting members by placing them into the vacuum apertures and removing them from the vacuum apertures. Ebersole et al. do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Rose et al. disclose reciprocating the spotting members by a robot arm in the x-, y-, and z- directions. Rose et al. also do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Applicant has not disclose that reciprocating the spotting members from the vacuum apertures at a certain distance solves any stated problem or is for any particular purpose. It is noted that intrinsically that the spotting member would be at 100 micrometers or 1 mm away from the aperture as the process of placing the spotting member into the aperture and removing the spotting member from the aperture would make the spotting member 100 micrometers away at some moment during the process of reciprocation. It is also noted that these distances are negligible, and since the spotting member touches the aperture at some point and the claim recites about 100 micrometers and 1 mm, Ebersole et al. and Rose et al. intrinsically cover these values during reciprocation. It is also very well known to reciprocate spotting members from the vacuum apertures by small distances, such as 100 micrometers, in order to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip.

Columbus discloses that useful spacing distance is between 50-600 microns between the members (16) and (18) to form a capillary transport passage (20) between opposing surfaces (24) and (26) (COL. 3, lines 37-51). Discovering the optimum or workable value, such as the reciprocation distance for reduction of splashing and pressure to remove fluid within and around the tip, requires only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Ebersole et al. or Rose et al. to have a reciprocation distance of 100 micrometers between the tip and aperture to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip.

3. Claims 64 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,753,775 to Ebersole et al. or U.S. Patent No. 6,551,557 to Rose et al. in view of U.S. Patent No. 6,245,297 to Kowallis.

Referring to claimed 64 and 86, Ebersole et al. disclose reciprocating the spotting members by placing them into the vacuum apertures and removing them from the vacuum apertures. Ebersole et al. do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Rose et al. disclose reciprocating the spotting members by a robot arm in the x-, y-, and z- directions. Rose et al. also do not address the distance with which the spotting member is reciprocated from the vacuum apertures. Applicant has not disclose that reciprocating the spotting members from the vacuum apertures at a certain distance solves any stated problem or is for any particular

purpose. It is noted that intrinsically that the spotting member would be at 1 mm away from the aperture as the process of placing the spotting member into the aperture and removing the spotting member from the aperture would make the spotting member 1 mm away at some moment during the process of reciprocation. It is also very well known to reciprocate spotting members from the vacuum apertures by small distances, such as 1 mm, in order to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip. Kowallis discloses that the spacing distance between the members and the substrate is less than about 2 mm, preferably less than about 1 mm (see COL. 13, lines 59-63). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Ebersole et al. or Rose et al. to have a reciprocation distance of 1 mm between the tip and aperture to accurately direct the spotting member into the correct aperture location, prevent splashing, and reduce the amount of vacuum required to remove fluid within and around the tip.

#### ***Response to Arguments***

- 9) Applicant's arguments with respect to claims 44-88 have been considered but are moot in view of the new ground(s) of rejection.
- 10) Applicant argues that Kowallis and Columbus is not analogous prior art. Examiner maintains that these references provide evidence that the claimed distance between the spotting member and aperture exists whether or not a vacuum is used. It does not matter whether this distance is used during the action of spotting or cleaning. These references teach the distance. It is noted that these distances are intrinsic to the new primary references applied. They both

disclose reciprocation of the spotting member and such small distances would be accounted for since the spotting member starts a certain distance and ends up touching the aperture.

- 11) Applicant argues that Ford et al. does not provide a vacuum. Examiner maintains that the reference provides evidence that a pressure with a magnitude of 90 psi can be provided by pressure systems that are commercially and widely available.

### ***Conclusion***

- 12) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They include one or more limitations in the claims.
- 13) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Quan whose telephone number is (703) 305-1947. The examiner can normally be reached on M-F (8:00-4:30).


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Elizabeth Quan  
Examiner  
Art Unit 1743

eq  
June 6, 2003

  
Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700